

REMARKS

Claims 69-81 are pending in this application. Claim 69 has been amended in this response to clarify an aspect of the claim without narrowing the scope of the claim.

In the Office Action dated June 11, 2004, claims 69-81 were rejected. More specifically, the status of the application in light of this Office Action is as follows:

(A) Claims 69-76 and 78-81 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,496,755 to Bayraktaroglu ("Bayraktaroglu") in view of U.S. Patent No. 5,374,564 to Bruel ("Bruel"); and

(B) Claim 77 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Bayraktaroglu and Bruel in view of Wolf and Tauber (Silicon Processing for the VLSI Era, Volume 1: Process Technology) ("Wolf").

The undersigned attorney wishes to thank the Examiner for engaging in a telephone conference on September 7, 2004. During that telephone conference, the present Office Action, Bayraktaroglu, Bruel, and claim 69 were discussed. The following remarks summarize and expand upon the points discussed in the September 7 telephone conference.

A. Response to the Section 103(a) Rejection of Claims 69-76 and 78-81

Claims 69-76 and 78-81 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bayraktaroglu in view of Bruel.

1. Claim 69 Is Directed to a Microelectronic Die Having a Substrate With a Separation Plane Between a First Portion and a Second Portion

Claim 69 is directed to a microelectronic die including a substrate having a first portion with a first surface, a second portion with a second surface, and a separation plane between the first and second portions. The first surface is opposite the second surface. The first portion projects from the second portion and has first and second voids extending from the first surface to the separation plane. The first void is tapered along a first axis and the second void is tapered along a second axis. The first axis is

generally parallel to the second axis. The first and second tapered voids are larger toward the separation plane. The microelectronic die further includes at least one operable microelectronic device disposed proximate to the first surface and between the first and second axes. Accordingly, the first portion along with the microelectronic device can be separated from the second portion at the separation plane to form a thin, compact unit.

Claim 69 has been amended in this response to clarify that the first and second portions of the substrate have not yet been separated in the microelectronic die of claim 69. This amendment clarifies this aspect of the claim and does not narrow the scope of the claim.

2. Bayraktaroglu Discloses an Integrated Circuit

Bayraktaroglu discloses an integrated circuit having a substrate, IMPATT and mixer diodes 446 and 454 over the substrate, and a plurality of contacts 460, 468 and 470 at a top surface of the substrate. The substrate has vias 492 and 494 that extend from the top surface to a bottom surface. The contacts 460 and 468 are disposed at the top surface of the substrate over the vias 492 and 494. A ground plane is formed in the vias 492 and 494 and over the bottom surface of the substrate.

3. Bruel Discloses a Process for Forming a Thin Semiconductor Material Film

Bruel discloses a process for forming a thin semiconductor material film. The process includes bombarding the face of a wafer with ions to implant a layer of microbubbles. The layer of microbubbles defines a lower region and an upper region constituting the thin film. The process further includes contacting the face of the wafer adjacent to the upper region with a stiffener and thermally treating the wafer to separate the upper region and stiffener from the lower region.

4. The Office Action Fails to Establish a *Prima Facie* Case of Obviousness for Claim 69

The MPEP requires the Examiner to set forth a *prima facie* case of obviousness. If the Examiner does not produce a *prima facie* case, the applicant is under no

obligation to submit evidence of non-obviousness. A *prima facie* case requires the Examiner to provide, *inter alia*, prior art references that disclose all the elements of the claim and a basis for combining or modifying the references. MPEP § 2143.01 provides, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." For the reasons discussed below, the Office Action fails to establish a *prima facie* case of obviousness with respect to claim 69.

Assuming for the sake of argument that the substrate, the bottom surface (of the substrate), and the vias of Bayraktaroglu's device correspond at least in part to the first portion (of the substrate), the separation plane, and the voids, respectively, recited in claim 69, the Examiner properly notes that Bayraktaroglu fails to disclose a microelectronic die including "a second portion with a second surface opposite the first surface," as recited in claim 69. The Examiner nevertheless asserts that it would have been obvious "to form the substrate of Bayraktaroglu by having a larger substrate and then cutting through a predetermined separation line as taught by Bruel." However, in order for the modified version of Bayraktaroglu's device to include "a substrate having a first portion with a first surface, a second portion with a second surface opposite the first surface, and a separation plane between the first and second portions, the first portion projecting from the second portion and having first and second voids extending from the first surface to the separation plane," as recited by claim 69, the vias in the modified device would need to be formed in the larger substrate before the first and second portions of the larger substrate are separated. For the reasons discussed below, the vias cannot be formed in the larger substrate, and, therefore, Bruel's method cannot be used to form Bayraktaroglu's device in such a way that the modified device would include all the features of claim 69.

Bayraktaroglu forms the vias 492 and 496 (best seen in Figure 4) in the back side of his substrate by "photoresist masking and reactive ion etching." (Col. 5, ll. 36-38.) If Bayraktaroglu's substrate were modified according to Bruel's method to include a first portion (i.e., the portion illustrated in Figure 4 of Bayraktaroglu) and a second portion projecting from the first portion, the vias could not be formed because the

material to be removed from the larger substrate is disposed directly between the bottom contacts 460 and 468 of Bayraktaroglu's device and the interface between the first and second portions of the substrate. Accordingly, Bayraktaroglu's vias cannot be formed in the larger substrate, and, therefore, Bruel's method cannot be used to form Bayraktaroglu's device in such a way that the modified device would include all the features of claim 69. Thus, the Section 103(a) rejection of claim 69 should be withdrawn.

Claims 70-76 and 78-81 depend from claim 69. Accordingly, the Section 103(a) rejection of these claims should be withdrawn for the reasons discussed above with reference to claim 69 and for the additional features of these claims.

B. Response to the Section 103(a) Rejection of Claim 77

Claim 77 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Bayraktaroglu and Bruel in view of Wolf. Claim 77 depends from claim 69 and is patentable over Bayraktaroglu and Bruel for the reasons described above with reference to claim 69 and for the additional features of this dependent claim. Furthermore, Wolf fails to cure the above-noted deficiency of Bayraktaroglu and Bruel as references to support a *prima facie* case of obviousness. More specifically, Wolf does not provide a way for Bruel's method to be used to form Bayraktaroglu's device such that the modified device would include all the features of claim 77. Accordingly, the Section 103(a) rejection of claim 77 should be withdrawn.

C. Conclusion

In light of the foregoing remarks, all of the pending claims are in condition for allowance. Applicant, therefore, requests reconsideration of the application and an allowance of all pending claims. If the Examiner wishes to discuss the above-noted distinctions between the claims and the cited references, or any other distinctions, the

Examiner is encouraged to contact David Dutcher by telephone. Additionally, if the Examiner notices any informalities in the claims, he is also encouraged to contact David Dutcher to expediently correct any such informalities.

Respectfully submitted,

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